

Date: Mon, 19 Jul 93 09:29:24 PDT
From: Info-Hams Mailing List and Newsgroup <info-hams@ucsd.edu>
Errors-To: Info-Hams-Errors@UCSD.Edu
Reply-To: Info-Hams@UCSD.Edu
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Subject: Info-Hams Digest V93 #874
To: Info-Hams

Info-Hams Digest Mon, 19 Jul 93 Volume 93 : Issue 874

Today's Topics:

DJ-580 question
IC-730 rf problem
Lightning Bolt Quad Review
Mitch, the qrp-list is what you are looking for
Order pizza on your autopatch now
Professional quality earphones - source?
QST CD-ROM
test
TS50
TS50 Illegal!

Send Replies or notes for publication to: <Info-Hams@UCSD.Edu>
Send subscription requests to: <Info-Hams-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Info-Hams Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/info-hams".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 19 Jul 1993 16:06:19 GMT
From: usenet.coe.montana.edu!news.uoregon.edu!
systems%ns.uoregon.edu@decwrl.dec.com
Subject: DJ-580 question
To: info-hams@ucsd.edu

I originally posted this to rec.radio.amateur.space and didn't get much
response so I'll try here...

Last year there was an article in the "hamsats" column of 73 magazine
about working rudak-2 with the dj-580. I have done some experimenting with
mine and am wondering if it has a problem. First of all, I would obviously
need a linear for the 70cm side. The problem I see is on 70cm transmit the

2mtr side is desensed. How can you hear the downlink with a desensed receive side? It appears that the FM signal is not affected by doppler near as bad as SSB (bandwidth?) So maybe you don't need to monitor the downlink? The author of the article (Andy, WA5ZIB) mentioned using headphones to eliminate feedback, so it seems to me he was monitoring the downlink on transmit. Any insights on this from other 580 owners would be appreciated.

So the basic question I'm asking is should the 2mtr side desense when transmitting on 70cm?

Thanks,

--

Jeff Hite KF7SZ
Computing Center
U of Oregon
jeffh@ludwig.cc.uoregon.edu

Date: 19 Jul 93 15:43:22 GMT
From: news-mail-gateway@ucsd.edu
Subject: IC-730 rf problem
To: info-hams@ucsd.edu

IC-730 RF Problem

>i am currently using an Icom 730 with a Pyramid Power Supply (12-15v @ 25A)
>and feeding the rig with a random wire thrown out of my bedroom window.
>The problem that I am having is that on 40m and 20m, i cannot get the rig
>to put out 100w. The tuner has a built in SWR/Power meter and I can get
>the SWR below 2:1, but I can't seem to get more than 50w output.

Regardless of what the SWR meter says, the load the rig is seeing is quite reactive, and the rig simply refuses to destroy itself trying to deliver power to that load! How long is the cable from the tuner to the rig? Sometimes that length can be a problem. If you have something else to try in there that is a different length I'd try it. No matter how hard you try you cannot make the reactive component of the load absorb energy! But you might destroy your rig trying! Fortunately, your rig is apparently working properly and protecting itself. Be careful.

You didn't mention the tuner but it may not be able to deal with the reactance and high impedance that your end-fed wire presents. Does the rig measure SWR on its meter? I can't remember, but I think it does. If so, tune the tuner to reduce the SWR indicated at the radio, not the tuner and give that a try. If you can, add some length to the wire; at least

8', and see what happens (but be careful!).

Your situation is another example of attempting to get the tuner (whatever that is) to do something it probably was never intended for. In spite of popular ham opinion, it is likely that your tuner simply cannot handle the load you are asking it to deal with. NO TUNER MADE BY MAN can really "load a bedspring" as some hams believe! You could probably build one, but none of the popular tuners can actually do it, contrary to what you may have been told by unknowing "elmers". All tuners have a designed in range of load impedances and reactive components that they can really deal with effectively. It is very likely that your end-fed wire is well beyond the capability of your tuner! Changing it's length may help on one band, and make it worse on another, so beware!

Your wire is probably 2000-8000 ohms on some bands. Considerably less on a band that the wire is odd multiples of a quarter-wave long. The typical tuner of today will handle 300-500 ohms max, within a limited range of reactance to boot. They will simply NOT TUNE ANYTHING as you may have been told! That is quite simply NOT TRUE! It is another example of popular ham lore that perpetuates bullfarb, ad infinitum.

>Sometimes,
>however I have been able to crank out all of the 100w. To make matters
>worse, under some circumstances, I can get a perfect 1:1 match with about
^^^^^^^^^^^^^^^^^^^^

Tells you something about what the SWR meter is capable of, doesn't it? Apparently at the low power levels the REVERSE power sensitivity is too low to read properly, and what you think is 1:1 is quite something else! Generally speaking, most bridges are 10db or more less sensitive in REV than they are in forward.

>10w output, but when i turn up the juice, the rig immediately turns off
>when i key the transmitter. I've noticed that the power supply shuts off
>when i hold down the key.

It's quite possible you could be getting quite a bit of RF into the power supply as well. I had a problem like that with a different piece of equipment, but it was somewhat similar to what you see happen.

>so now for the question.....what's going on???????!?!?!?!?

Some of these popular mis-conceptions are dangerous, as you have found out. Be thankful that your rig still works, as it could have very easily gone up in smoke if it wasn't trying so hard to protect itself from you! Hi!

>oh, yeah, one more important point....I am 30 ft off the ground and the only

>ground I use is the DC wall ground and a counterpoise as an artificial RF
>ground.

I wouldn't even bother with the wall ground!

>any suggestion on how to cure this?!?! I would like to run all of 100w
>because those testers can get quite impatient with my S1 signal.

Good luck, and watch out for the RF burns!

Paul

WB2OYC

ar..

Date: 19 Jul 93 16:13:59 GMT
From: news-mail-gateway@ucsd.edu
Subject: Lightning Bolt Quad Review
To: info-hams@ucsd.edu

Lightning Strikes

Review of the Lightning Bolt 5 band, 2 element cubical quad:

Gain: 8db
F. to B. 26
Side Lobe 50
Boom diam. 2"
Turning radius 10.6'
Weight 25lbs
Arm Length 13'4"

Actual SWR measure after installation using given assembly measurements:

10 Meters:	28.000	2.0:1
	28.200	1.7:1
	28.300	1.5:1
	28.500	1.12:1
	28.700	1:1
	29.000	1.2:1
	29.700	1.6:1

12 Meters: 1.5:1 or better

15 Meters better than 1.4:1

17 Meters 1.5: or better

20 Meters: 14.000 1:1
 14.100 better than 1.2:1
 14.350 1.2:1

* I just did what the instructions said and did no tuning (yet)

The Saga Begins:

I really wanted a directional antenna. All the work involved scared me. I saved for a while and went to the big Hamfest in Huntsville, Al. This was my first big ham fest. I had enough money to buy a two element 3 band Yagi. I would then save for the tower and the rotor. I went to the hamfest and hung around the antenna booths asking a lot of questions. I came across the Gap booth and there seemed to be a bunch of people who had previously purchased a Gap Vertical and were very happy with their purchase. My elmer has been using the Gap with very good results for a long time. I ended up spending my money on a Gap. The Gap was very easy to assemble and put up and I have used it for two years.

I really love QRP and was getting the directional antenna bug again. A friend has a quad and I think they are really nice looking and have heard him up against a local Mosley tri-bander chasing DX. The quad seemed to get through a lot better. About a year ago I sent for the literature on the Lightning Bolt five band two element quad. I read a lot about the pros and cons of quads versus yagis and decided on a quad. The work involved and the cost kept me back.

Progress

A friend offered me 30 foot of tower that matched 30 foot of tower that held my TV antenna, this was the first sign that I needed to take some action. The second sign was that my TV antenna was about dead. The third sign was the article in CQ magazine saying the Lightning Bolt really worked well.

I took the old TV antenna down from the tower and mounted a new one on my roof attached to the chimney. Had loads of fun with wrong parts and such. This freed up my tower. The only problem was that I had very large trees all around the tower. I got out my chain saw and tuned it up. I ended up having to take down seven trees that were all 70 foot or bigger. Luckily a new ham friend happened by with his pickup and helped out. Instead of cutting up the trees, we hooked them to the truck and pulled them into some acreage I don't use.

I then had to pull the top of the tower off and added an extra 10 foot section and put the top section back on . This turned into quite a project. This was bested by putting up of the 21 foot section of thick walled steel pipe. I think anyone who puts up a tower needs to find a friend with a Cherry Picker. Without any special devices except for a climbing belt and rope, we managed

to drop the mast down through the middle and back thru the appropriate support.

Building the Antenna

All of this was taking place over a month and a half period. My antenna had arrived about three weeks after cutting down the trees. The instructions were only a few pages long. There was only one unclear part in all the instructions. This involved the tuning stubs for the reflector element. There is a section that describes an eight inch variable stub and then the next section gives exact measurements for the stubs for each of the 5 bands. I chose to use the specified measurements and didn't figure I wanted to mess with this antenna if in fact I ever got it all assembled.

I took my time building it. I assembled the spider parts one night then built the reflector then the driven element. You only need to be careful with the wire. It likes to coil back up and could really get you hurt if you let go of it. We were pretty carefull cutting the wire which was a little hard because of the type of wire, but nothing to worry about. It is really pretty easy to put together and very light.

Finished

Well we finally got everything built and I wanted to see the antenna work. The temperature was about 99 degrees and much hotter on the roof. It took about 5 hours in the hot sun getting the elements on the boom and the rotor working right.

I went into the house very nervously. I took out my MFJ digital antenna analyzer and hooked it to the antenna. I let out a big sigh of relief and went outside yelling and screaming. My friend who was helping me was still strapped to the top of my tower and was very relieved to hear the good news.

On the Air

We were both pretty heat sick at this point, and drenched. I turned on the radio and actually plugged in a microphone, something I hadn't done in a while. I worked VP5M in the Caicos Isands on 15 meters, then I8UDM first call thru a pileup on 17 meters, CT1GG/CU3 first call to the Azores on 17 meters.

I hooked up an antenna switch and went back and forth between my Gap and the Quad. the Gap would read 51 and the quad would read 57 to 59. In some cases I couldn't even hear the station on the Gap and he would be nice and strong on the quad.

The Real Test

WS4S, the only other QRPer in town came over the same evening to help work on a friend's tube rig. He had to play with the new antenna before we started on the rig. The first thing he did was turn the power on the rig down to 1 watt and worked 4X1EL, after which I worked him also.

He was grinning and getting ready for some serious experimenting. He turned the power down to 20 MW and worked Z36CXN in Macedonia. I really wanted the same station, so I cheated and cranked the power all the way up to 70MW.

Next he said. "this will be futile, but I am going to call CQ." He turned the power to 50 mw and called CQ once. He said, "this is futile."

I said, "you better stop talking about QRP that way, try again."

He called one more time and Y08CDC came back to him. He talked to this guy on 20 meters and turned the power down to 10mw. The RST was 549.

Next he worked HA5HC in Hungary. He started with 50mw and the RST was 579. He started chatting and turned the power down to 10mw. The RST was now still 579 and Emil reported the signal was nice and strong. Next he turned the power to 1mw and the RST went all the way down to 559 with a good report. Conard, WS4S talked with Emil for quite some time on LOW POWER.

Guess

Well my feeling is the antenna is working ok and that I got my money's worth. As I keep saying, "you shouldn't have low expectations on performance just because you are using low power."

73

Jeff, AC4HF

Date: 19 Jul 93 16:26:02 GMT
From: news-mail-gateway@ucsd.edu
Subject: Mitch, the qrp-list is what you are looking for
To: info-hams@ucsd.edu

>
> Date: Fri, 16 Jul 1993 13:36:29 GMT

> From: agate!howland.reston.ans.net!usc!cs.utexas.edu!csc.ti.com!
tilde.csc.ti.com!m2.dseg.ti.com!ernest!
> cmptrc!mitch@ames.arpa
> Subject: qrp...
> To: info-hams@ucsd.edu
>
> I'm looking for some net wisdom. Now that my code speed is starting to come
> back up I'm debating on going qrp for my cw work. (a lot less rfi problems than
> my borrowed hw101 /grin). I'm looking for thoughts on the subject as well
> as some ideas on decent, affordable cw qrp radios. I've been reading the
> adds for the MFJ radios and they look pretty good for the price I can
> get one locally for. Any ideas? Hints?
>
> Thanks!
> Mitcheal
> KA5SOI
> (tech+ upgrading to general and beyond!)
Mitch, you may want to join the qrp list as you will find answers to all
your questions. Here is an excerpt from the list's welcome message with
subscription info:

The mailing list address is QRP@Think.COM; mail to that address will be
sent to everyone on the list without human intervention. There is also an
administrative address QRP-Request@Think.COM which will be monitored by the
list maintainer(s); please use that for such requests as adding or removing
yourself from the list, questions about the FTP access, etc.

Good luck and 73

Tom, KV2X
jennings@abb.com

Date: Mon, 19 Jul 1993 13:28:33 GMT
From: usc!howland.reston.ans.net!darwin.sura.net!news-feed-2.peachnet.edu!concert!
uvaarpa!murdoch!livia.acs.Virginia.EDU!jeg7e@network.ucsd.edu
Subject: Order pizza on your autopatch now
To: info-hams@ucsd.edu

In article <1993Jul19.110351.28366@ennews.eas.asu.edu> shandrow@enuxva.eas.asu.edu
(Darrell B Shandrow) writes:

>
>Actually, I wasn't aware of this. However, I agree with it. Well, I'm not
>sure it is prudent for someone to use the autopatch for ordering food, but,
>oh well.

>Just the other day I got myself into a situation where I had to use the ap
>to call our local transit authority. I was unsure about it but I was
>overheating and all and if nothing else it is an emergency communication.
>Does this new ruling mean it is ok for me to do this?
>Btw, I'm a blind person who uses the bus system all the time and had gotten
>myself into a bind and had to get sked information for the bus. I was
>unable to locate a telephone. 73 de nu7i

Completely OK, without qualification.

--

\\ \ / Jon Gefaell, Computer Systems Engineer | Amateur Radio - KD4CQY
\\ \ / Information Technology and Communications | -Will chmod for food-
\\ \ / The University of Virginia, Charlottesville | Hacker@Virginia.EDU
Any opinions expressed herein are not intended to be construed as those of UVA

Date: Mon, 19 Jul 1993 13:16:11 GMT
From: dog.ee.lbl.gov!overload.lbl.gov!agate!howland.reston.ans.net!
darwin.sura.net!ukma!hgpeach@network.ucsd.edu
Subject: Professional quality earphones - source?
To: info-hams@ucsd.edu

I am looking for a source of professional quality earphones (i.e.,
skin colored, coiled wire, SMALL, etc. The only thing RS seems to
carry are these black jobs. They work fine, but are not very
inconspicuous.

73, Harold
hgpeach@ms.uky.edu

--

Harold G. Peach, Jr. ><> N4FLZ _% hgpeach@s.ms.uky.edu

Date: Mon, 19 Jul 1993 15:10:31 GMT
From: usc!math.ohio-state.edu!darwin.sura.net!newsserver.jvnc.net!yale.edu!
news.yale.edu!hilbert.chem.yale.edu!oswood@network.ucsd.edu
Subject: QST CD-ROM
To: info-hams@ucsd.edu

While visiting ARRL HQ in Newington several months ago, I learned that the
ARRL is considering making back issues available on CD-ROM sometime in the
future. However, the people in the publications division said that no
such service is currently available.

Mark C. Oswood KD1PX oswood@psun.chem.yale.edu
or moswood@biomed.bitnet

Date: 19 Jul 93 15:20:23 GMT
From: news-mail-gateway@ucsd.edu
Subject: test
To: info-hams@ucsd.edu

test

Date: 19 Jul 93 15:44:00 GMT
From: news-mail-gateway@ucsd.edu
Subject: TS50
To: info-hams@ucsd.edu

TS-50

Marc wrote:

>
> Well, from my operating experience (several hours with one) I can say that
> while the receiver SOUNDS good (i.e., has good clarity, nice audio, etc.)
> it leaves something to be desired for sensitivity. Plus, many of the
> ^^^

Really? Marc, wonder how you managed to determine this?
Did you measure it, or was this your perception?
If perception, wonder what bands it was based on?

Can you really tell the difference between -135dbm and -133dbm?
I suspect that it was something other than a lack of sensitivity that
left you with that perception.

Do you realize that sensitivity is really not terribly important these
days, as they (the vendors of amateur equipment) have not made a radio
in the last 20 years that was NOT SENSITIVE ENOUGH for the HF range!
Actually, too much gain, or a poor gain distribution, what many hams
would call a "really hot receiver", usually suffers from severe lack
of performance in much more important areas with today's crowded ham
bands in mind.

In fact, most of them are far more sensitive than they NEED to be for
use on the amateur bands below 30mhz! A .5uv for 10db spec is more
than adequate for any normal HF activity, unless that includes using
low gain receiving antennas (like a beverage) without a preamp for

example.

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> features one expects on a receiver are not available (notch, if shift).
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Like Fred's, my TS-50 DOES have IF shift! ^^^^^^^
I believe all the TS-50's made by Kenwood do have it as well.

Most "notch" filters I've ever used are too damn tedious to adjust anyway, and for that reason I seldom ever use one if it is available. Not only that, if its IF-based, it screws up the bandwidth so bad it really makes the signal difficult to understand, and hard to listen too. More trouble than its worth most of the time, unless you're trying to operate within several khz of an AM station, they're next to useless for me.

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> For my money, I'd sacrifice size and get an Yeasu FT-890.  This rig has a
> great receiver, built in tuner & keyer, and, with the tuner, costs less
> ^^^^^^^^^^^^^^^^^
```

I would agree with your assesment that the FT-890 does offer alot for the money, and every one I have heard on the air sounds very good on SSB. The size, for me, was a deciding factor however, and apparently Fred as well. The radio has not been disappointing in performance either, so I made a good deal; for me. After all, that's why they make chocolate and vanilla. What's right for you may not be for me. Obviously, for you, the size difference was not as important a consideration. So you got a good deal too, and thats terrific. But all that doesn't make one radio BETTER than another, because we all bring a yardstick of different length to make the measurement by. What's better for me, may not be better for you or Fred, and its as simple as that.

Hmmm!? What is it for you that makes a "great receiver"? I would be really interested to hear. Personally, I've only owned one (1) in over 27 years as a ham; and that was the FT-1000D. Lots of "good ones" and a few were excellent, but only one "great" one.

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> than the TD-50 with the tuner.
>
>Marc-
```

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>>Although I agree with your assessment of the FT-890, I still prefer the
>>TS-50. While the Yaesu offers a lot for the money, I find it more
>>difficult to use.
```

[illegible]

And as long as thats the case, the radio is MORE than sensitive enough!
Precisely!

>>does have a "Scotch" S-Meter. I can understand signals on Ten Meters, that
>>don't even register on the meter.

^^

Good point Fred!

Don't know what "Scotch" S-meter means for sure, but S-meter activity or response has NOTHING at all to do with sensitivity! If the S-meter was absolutely accurate, 1uv would register S3. So it's a safe bet that the signals Fred was hearing were considerably less than 1uv!

Altho' S-9 is supposed to be -73dbm (50uv), band-to-band gain variations in most equipment render it useless as an absolute indicator. For example, 50uv may read S-9 on a particular radio at 14mhz, but the same level will often read S-9+30 on 3.9mhz! In this case the band-to-band gain has changed by 30db! Does that mean the radio is more SENSITIVE on 3.9? Absolutely not! It means the radio has an excess GAIN on 3.9, and thats all. A slow or low reading S-meter DOES NOT MEAN A RADIO IS NOT SENSITIVE ENOUGH! It may mean the radio is down some on GAIN on a particular band, but it doesn't mean its not sensitive! With the current crop of small radios it would not be surprising to find one or the other lacked some GAIN on a particular band, as one way to make them smaller is to simply not have as many IF stages.

That impact can be significant as it means the design must recover the gain lost by not having enough stages, and they then attempt to make up the loss by requiring the mixer stages to provide much more conversion gain than they otherwise would. This compromise usually means the radio suffers from other performance maladies, but very few could be said to be not sensitive enough.

What does the typical spec for sensitivity mean then? What does .25uv for 10db S/N actually mean? What it says is this: A signal level of .25uv (or less) will generate an increase of (at least) 10db at the radio's output. And it better, as you'll see!

As such, it is more a spec of GAIN, not sensitivity! The reason is that .25uv is well above the radio's MDS (typically -135dbm)! Note that .25uv (-118dbm), is 17db or so ABOVE the radio's MDS (minimum discernable signal level, or noise floor) to start with. This is precisely why the spec usually says "at least 10db" or ".25uv or less" will produce the rated increase in output. The rigs we use these days usually have a noise floor of between -134 to -141dbm, (note that .1uv is -128dbm!), so its easy to see that they offer quite a bit of excess sensitivity in most cases. It also makes other properties of the receiver much more important when making

comparisons of equipment, because they're already plenty sensitive enough, as Fred said above!

The noise floor of a receiver establishes the MDS (minimum discernable signal level), and thus the ABSOLUTE MINIMUM signal that can be detected by the radio. This MAY be what Marc observed (above) that gave him the impression the radio was less sensitive than it should be. It's also why I asked what band he observed this on, as it may indicate a problem somewhere else (like synthesizer) that might raise the noise floor on a particular band and ruin the radio's performance. However, it's not very likely that he was attempting to listen to a signal at, or very near the noise floor of the radio 'cause as Fred said, the atmospheric noise is well above that on any and all HF ham bands anyway.

>>My TS-50 does have IF Shift, located on the same shaft as the RIT control.

[illegible]

Ditto! Bells-and-whistle's, as they've come to be called! And I, like Fred, truly find many of them to be just that; bells-and-whistles are things we don't need, or use very often anyway! What's a shame about this is that you get'em on most equipment whether you want'em or not! I'd rather see them spend more money on improving basic radio performance, instead of all the damn "B&W's"!

```
>>use the notch filter, XIT or speech processor on my other rig. I really
>>appreciate the LCD display that can be read in direct sunlight. Being able
>>to set up four functions to be controlled from the buttons on the
>>microphone, is quite handy when mobile.          ^^^^^^^^^^^^^^^^^^^
```

Yes, I do like this feature, but one is tragically missing for me! You can't (or is it that I haven't figured out how to do it yet?), have a button select modes like I want it to. You can select, and then bounce between AM-FM, for example, BUT YOU CAN'T THEN GO BACK TO USB-LSB-CW WITHOUT pushing the darn little button on the radio itself! This one really ticks me off, 'cause I use the radio often for SW listening, which is of course, AM. But once I've done that I can't go back to SSB or CW without hitting that damn little button on the radio, which is hard to find, kinda close to the tuning knob too! !#\$\$%^!^&)

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>>However, it is only a matter of time until the other manufacturers match
>>the TS-50. A transceiver even smaller than the FT-890 would be neat, if it
>>had a built-in tuner.
```

>>73, Fred, K4DII

73's
Paul

odonnellp@mar65.mar.ora.fda.gov
ar..

Date: 19 Jul 1993 14:34:23 GMT
From: orca.es.com!olin!alan@uunet.uu.net
Subject: TS50 Illegal!
To: info-hams@ucsd.edu

In article <22e778\$t15@jericho.mc.com> levine@mc.com writes:
>The lead article in this week's W5YI Report is the story of several
>Ham Radio retailers (like HRO) who were fined \$7000 for selling the TS50
>because it can transmit out of the Ham bands right out of the box
>and it isn't type accepted for those frequencies. The article also
>specifically mentioned the FT530 HT which can also transmit out of
>the Ham bands right out of the box (140.000 - 150.000)
>
>If it is illegal to sell these radios, then is it illegal to use them?
>Is it legal to use a radio which is type accepted for a part of the
>spectrum it covers, but not the entire spectrum it covers?
>

>Bob

>
Well, this is interesting. I have owned numerous transmitters and
transceivers through the years, and every single one of them had
the capability of transmitting outside of the amateur bands. None
of these have ever been declared illegal to my knowledge. At the
moment, I own a TS930, an IC720A and a TR3, and each of them will
transmit outside of the amateur bands. Same deal with our TS440
here at our club station at work. Why should a distributor be
penalized because a manufacturer designs and builds "improperly"
designed equipment. Didn't the FCC approve the equipment for sale
here in the U.S. anyway? What is going on here? What's wrong with
this picture? Seems kind of fishy that Kenwood would come out with
what appears to be one of the greatest advances in HF transceiver
technology - an ultra-compact full function HF transceiver, handily
beating Yaesu, Icom and Ten-Tec to the market, and all of a sudden
the TS-50 is "illegal"? Hmmmmm...very strange indeed.

--
Alan Brubaker, K6X0 |~|_ "Pumps have handles, Hams have names;
<IYF disclaimer> | * |mine's Lee, what's yours?" - Lee Wical,
Internet: alan@dsd.es.com|____|KH6BZF, the Bloomin' Zipper Flipper.

End of Info-Hams Digest V93 #874
